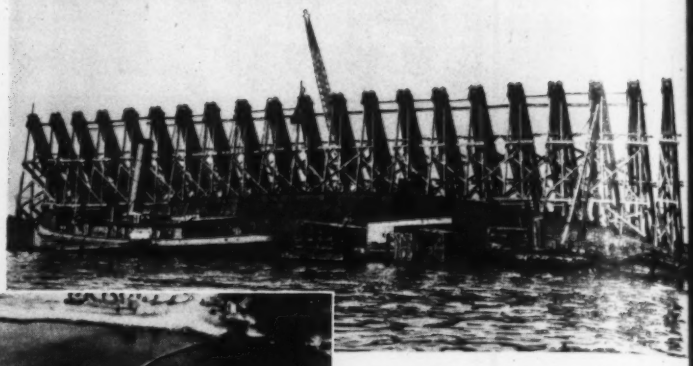
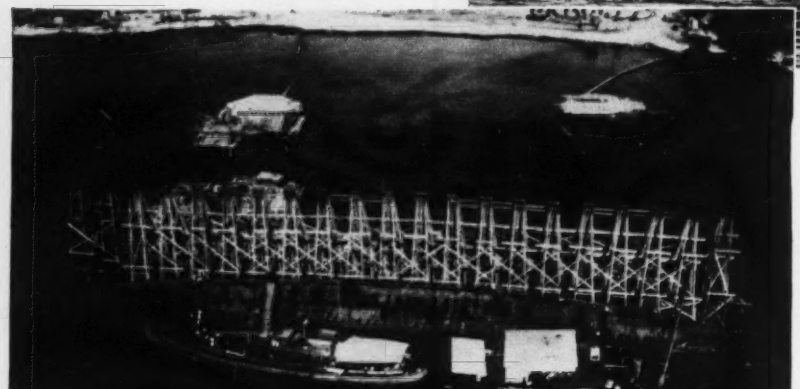
ENGINEERING NEWS-RECORD

onstruction completes modernization of Overseas Highway from Florida to Key West.—See p. 3.

The RIG *that Righted the* OKLAHOMA

The story of the righting of the *Oklahoma*—a major engineering achievement by the Pacific Bridge Company, with an "assist" from G-E equipment and G-E application engineering





BY

R. F. EMERSON

Industrial Engineering Division, Schenectady, N. Y.

CHARLES STOECKLY

Industrial Division, San Francisco Office

Archimedes Did It First

The year was 285 B.C. A war galley of the King of Syracuse was capsized in the mud. Archimedes, called to the task of righting it, applied the principle of the "compound pulley"—and the muscles of sweating slaves—and succeeded in restoring the 200-ton vessel to service.

The *Oklahoma*—30,000 tons—responded to the same treatment by the men of Pacific Bridge. Sweat? Plenty! But—this time—the "slaves" were motors, and they responded to the commands of their master more faithfully, bent to their task more willingly, than did the serfs of Syracuse.

Versatile Winch Drives Do It Better

Twenty-one G-E variable-voltage motor equipments were chosen to drive 21 winches. These winches, spaced 17 feet apart, were each designed for a line pull of 72,000 pounds at one foot per minute. The resultant pull on the ship was more than 600 tons per winch—an aggregate of nearly 13,000 tons for the 21 winches.

The moving blocks of the 21 compound pulleys were attached to the tops of 21 A-frames erected along the bilge keel of the ship to provide the necessary turning moment, and the A-frames were backstayed by lines attached to the side of the hull.

The Real Problem

It was imperative that the winch motors be capable of the most precise individual control. It was not possible to predict the reaction of the huge vessel when it started rolling on a bottom which varied—along the ship's length—from semiliq[uid] muck to solid reef coral. Possibili[ties] existed for rocking fore and a[ft], differential rolling and sliding, a[nd] changes in the center of rotati[on]. (All these were encountered.) Fu[r]thermore, the forces involved in t[he] righting were so great that fail[ure] to control them might well compl[ete] the job the Japs began—by breaki[ng] the ship apart! Only a control syst[em] capable of responding fully to t[he] judgment of the men in charge of t[he] work would serve this job.

Given an understanding of t[he] true problem, such a system was n[ot] too difficult to devise, but to bu[ild] and supply the equipment on sh[ort] notice was a task of some magnitud[e]. D-c machinery—then, as now, a critically scarce commodity—had t[o] be rounded up swiftly, and its chara[c]teristics altered as necessary to f[it] the job; control equipment had t[o] be built from parts that were obta[in]able; the system had to be assembl[ed], tested, and shipped. The doing of th[is] required the ingenuity and the e[x]operation of men in G-E engineer[ing] offices, warehouses, and factor[ies] from San Francisco to Schenectady.

We at General Electric are proud to have helped with this tremendous task—and glad that the *Oklahoma* floats to fight again.

This project illustrates the kind of assistance General Electric engineers can render to solve problems and promote progress in the construction industry. If you have a problem, the skill plus G-E equipment might well provide the best solution. Just get in touch with our nearest office. We'll be glad to help you. *General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

165-35-8498

The Week In Engineering and Construction

NGINEERING NEWS-RECORD • MAY 25, 1944 • VOLUME 132 • NUMBER 21

Reclamation Bureau sends Missouri report to Senate

Plan calls for an initial $200,000,000 postwar construction program as part of a $1,258,000,000 program for the entire Missouri River basin.

Secretary of the Interior Harold L. es has transmitted to the Senate a ort by the Bureau of Reclamation on lan for the latter's part in the inte- ted development of the water re- rces of the entire Missouri River in. It calls for postwar construction multiple-purpose projects at a total t of $1,257,645,700. The voluminous ort when printed will be known as ate Document 191.

Mimeographed copies are already in hands of Senate Committee on Com- rce, as part of the bureau's testimony connection with two bills which the mmittee has under consideration, au- rizing construction by the Corps of gineers of projects in the Missouri in. Those bills are H. R. 3961, for 00,000 of works between Sioux City, a, and the mouth of the river; and R. 4485 for $200,000,000 worth of jects in the upper basin.

Initial postwar program

The initial construction proposed by bureau would require $200,000,000 would be predominantly for irriga- and power. It includes none of the tures that would be constructed by Corps of Engineers in the develop- nt of the basin, but would comple- t the flood-control projects proposed the corps, according to the bureau's ort.

Six areas in main plan

The area covered by the complete n is divided into six subdivisions in ch the bureau's estimate of $1,257,- 700 for the entire undertaking is ded as follows:

watone	$177,601,000
er Missouri	103,614,000
or Western tributaries	35,021,200
rara, Platte, and Kansas vers	273,025,500
t Peck to Sioux City	393,621,000
er Missouri	195,800,000
er transmission	68,000,000
t Peck power system	10,963,000

Included in the program are 90 reservoirs having a combined storage capacity of 45,700,000 acre-ft.; new facilities for irrigation of 4,760,000 acres in seven states, and facilities to provide additional water for 538,000 acres now said to be inadequately irrigated; 17 power plants with an installed capacity of 750,000 kw. to supply water for domestic, municipal and commercial uses and five plants to furnish power for pumping irrigation water, with a total installed capacity of 396,000 kw., and annual yield of 908,500,000 kw.-hr. of seasonal power.

The report says that the output of the power plants would be subject to the effects of reservoir regulation for irrigation, flood control, and aid to navigation.

Under the bureau's plan 19 municipalities would be able to obtain new water supplies.

Large reservoir in the Dakotas

Of the flood-control and navigation projects proposed by the bureau, the main one is the Oahe reservoir on the Missouri River in the Dakotas. It would extend from a point eight miles above Pierre, S. D., to the vicinity of Bismark, N. D., and would have a capacity of 19,600,000 acre-ft.

In commenting on jurisdiction over projects such as this one, Maj. Gen. E. Reybold, Chief of Engineers, said that all projects on the main stem of the river in the Dakotas should be construct-

(*Continued on next page*)

Photo by R. K. Laban

Sanitation south of the border was the topic

At a recent meeting of Pan American health officers in Washington, D. C., sanitary engineering problems were discussed by: Lt. Col. H. B. Gotaas, chief engineer of the health and sanitation division, Office of the Coordinator of Inter-American Affairs; Dr. John Long, senior traveling representative of the Pan American Sanitary Bureau; Abel Wolman, consulting engineer and chairman of the bureau's sanitary engineering committee, and Col. W. A. Hardenbergh, chief of the Saniary Corps of the U. S. Army.

ed and operated by the corps, to which Commissioner H. W. Bashore of the Bureau of Reclamation in reply agreed at the Senate hearings, "owing to their close relationship with flood control and navigation." It is further agreed that in respect to other projects, the agency having the dominant interest shall construct them.

The Oahe project is designed to reduce silt load in the lower river, catch peak runoffs to prevent flood, furnish water for navigation of the lower river, generate power, and furnish water to irrigate 750,000 acres on the west side of the James River, a tributary in eastern South Dakota, by pumping water into a high canal, which would carry it over into the James River basin.

Gen. Reybold questioned the advisability of developing a large irrigation project outside the basin until existing and foreseeable needs within the Missouri basin have been satisfied.

Added navigation storage

The Oahe Reservoir, together with a 5,000,000 acre-ft. reservoir at Ft. Randall and a small reservoir at Big Bend, would occupy almost the entire length of the Missouri River channel in South Dakota. The bureau intends that these reservoirs shall furnish storage of water for navigation in lieu of some of the present storage at Fort Peck, thus making water from that reservoir available for irrigation.

The bureau proposes to divert water from the Missouri below Fort Peck Dam for irrigation in the Devils Lake region, which is a radical departure from the army engineers' plan.

Differences between the two plans in storage capacity are shown in the table below:

Commenting on differences in the two plans, the bureau report says that plans on storage needs for all purposes "can be composed." But it adds that "the relative allocation of water for irrigation and navigation involves a policy in water use which these agencies cannot establish or modify. Irrigation, and storage of any kind, deplete streamflow. It is estimated that the dependable flow of the Missouri River at Sioux City, with completion of all of the development contemplated in the reclamation plan, may be reduced to an amount somewhat below 20,000 sec.-ft."

It goes on to say that the necessary flows for a 9-foot channel below Sioux City—which is proposed by the Corps of Engineers—are not definitely known, but "The Reclamation development would, when completed, use somewhat less than one-half the original streamflow at Sioux City."

Hearing on the Army Engineers flood-control bills will begin on May 29 before a subcommittee of the Commerce Committee of the Senate. General Reybold will open the hearings with a general statement, after which individual river basins will be separately considered. The hearings are expected to end on June 7 with consideration of the Missouri River basin plans.

	Army plan acre-ft.	Reclamation plan acre-ft.
Yellowstone Basin	5,750,000	4,285,000
Missouri River above Yellowstone	0	4,974,000
Western Tributaries in North and South Dakotas	0	1,237,000
Main stream in North and South Dakotas	35,200,000	24,950,000
	40,950,000	35,446,000

WPB Council plans aids in postwar construction

A meeting of the newly formed advisory council of the War Production Board's government division will be held shortly, possibly before the end of June, to hear reports being prepared by sub-committees. Among the problems to be discussed are those related to construction.

The advisory council was created to work out methods by which the government division, of which Arthur G. Eaton is director, can aid states, municipalities and various types of public institutions during the postwar adjustment period. Membership of the council is made up of nearly 20 governors, mayors, city managers, and administrators.

At a recent meeting of the council, considerable discussion was given to public works construction. Members said their communities are spending money preparing plans which cannot go forward if WPB is to continue controls for any period of years. It was indicated by WPB officials that relaxation of restrictions on construction work will take place gradually, from time to time.

Plan for disposal of surplus equipment

The Surplus War Property Administration, headed by W. L. Clayton, has issued Regulation No. 1, effective May 15, governing disposal of surplus war property owned by the Army, Navy, and Maritime Commission.

Within the continental United States, its territories and possessions, all surpluses of construction equipment owned by these agencies will be declared to, and disposed of by, the Procurement Division of the Treasury Department.

In active theaters of operation, military and naval commanders may sell or otherwise dispose of any surplus property within their command.

Owning agencies, pending further regulations, may sell surplus property in localities outside the continental United States, its territories and possessions, where the Foreign Economic Administration has no local representative, and in localities in the territories and possessions of the United States where the appropriate disposal agency has no local representative.

The FEA will be responsible for disposal of equipment located outside the United States and its possessions, in territories where it has local representatives.

Large new lake created by Norfork Dam

Water in Lake Norfork, being created by the Norfork Dam in Baxter County, Ark., has crossed the Missouri-Arkansas line, but the water is still 48 ft. below the permanent power level. The lake will extend 26 mi. in Arkansas and 5 mi. in Missouri. The head of the lake will be at Daws, Mo., and there will be about 500 mi. of shore line. Lake Norfork is now a mile wide in many places and its greatest depth is about 140 ft. Most of the water comes from springs in Ozark County, Mo.

ENGINEERING NEWS-RECORD. Published every Thursday. Return postage guaranteed. Vol. 132, No. 21. Price 25c per copy. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 99-129 N. Broadway, Albany, 1, N. Y., or 330 W. 42nd St., New York, 18, N. Y. Subscriptions, United States, U. S. Possessions and Latin American Republics, $5.00 for one year, $8.00 for two years, $10.00 for three years. Canada, $6.00 for one year, $10.00 for two years, $12.00 for three years. Great Britain and British Possessions 60 shillings for one year, 120 shillings for three years. All other countries, $9.00 for one year, $18.00 for three years. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the act of March 3, 1879. Printed in the U.S.A. Cable Address: "McGrawhill New York." Member A.B.P. Member A.B.C. Copyright 1944 by McGraw-Hill Publishing Co. Inc., James H. McGraw, Founder and Honorary Chairman; James H. McGraw, Jr., President; Howard Ehrlich, Executive Vice-President for Business Operations; Abbink, Executive Vice-President for Editorial Operations; Curtis W. McGraw, Treasurer; Joseph A. Gerardi, Secretary; J. E. Blackburn, Jr., Circulation Manager. **Publication office: 99-129 North Broadway, Albany, 1, N. Y. Editorial and Executive Offices: 330 West 42nd St., New York, 18.** District Managers and Branch Offices: Fred G. Hudson, 520 N. Michigan Ave., Chicago 11; 738-9 Oliver Building, Pittsburgh; J. W. Otterson, 68 Post St., San Francisco, 4; Aldwych House, Aldwych, London, W. C. 2, England; Washington: J. M. Spackman, New York; A. B. Cozzens, Philadelphia; E. E. Duff, Jr., Cleveland; B. P. Horn, Detroit and Chicago; Richard Y. Fuller, St. Louis; R. N. Phelan, Los Angeles; J. I. Ballard, Boston; Ralph Maultsby, Atlanta, Ga.

Big lag is seen in translating postwar project plans into reality

At Maryland-Delaware water and sewerage conference Abel Wolman charges that virtually nothing is being accomplished in public works field except the listing of "hopes and desires".

Despite eighteen months of promotional effort, postwar public works planning is still in the "hopes and desires" stage, with relatively little accomplished toward translating dreams into realities, according to Abel Wolman, consulting engineer of Baltimore and chairman of the National Committee on Water and Sewage Works Development.

Although some $7 billion of public works needs have been listed for action, less than $2 billion of these projects have reached the plan preparation stage, he said. "If the $7 billion estimate is a realistic appraisal of needs, then there is an unnecessarily large gap between these needs and the measures being taken for their fulfillment," stated Mr. Wolman. His remarks were made before a meeting of the Maryland-Delaware Water and Sewerage Association, which held its annual conference at Baltimore May 19-20.

Postwar planning, charged Mr. Wolman, has gotten little further than the listing of desired projects, these "lists" being simply a reflection of all the hopes of all the individuals who may have had a hand in their compilation. While the formulation of a list of projects is the necessary first step in advance planning, unless it is followed aggressively with the preparation of designs and specifications, the acquisition of land and the passage of authorizing legislation, postwar planning simply degenerates into a national pastime. That this is becoming a fact is revealed in a recent survey of 867 municipalities which have made postwar project lists; more than 300 cities in this group frankly admit that nothing further has been done to activate their plans and the balance indicate only varying degrees of accomplishment.

In another survey of 167 cities whose postwar lists called for a total of $3½ billion in sanitation works, steps already taken to finance the projects provided only $87 million—less than 3 per cent of the necessary funds.

"Engineers, laymen and legislators face a formidable challenge, concluded Mr. Wolman, in taking such steps as will activate postwar plans to the point where they will prove effective in meeting the needs of the future.

"There will be no appreciable relaxation of War Production Board controls over materials and equipment until success of the European invasion is assured, according to William D. Williams, chief of the water supply section, water division, war utilities section of the WPB. Mr. Williams pointed out that many materials were still in the critical category, among them:

Lumber (all types of form lumber and stock sizes under 2 in. are short); steel (sheet and plate are difficult to obtain but structural shapes and reinforcing steel are available); and fabricated items (manufacture of all types of equipment reflect the shortage of manpower and fabrication facilities).

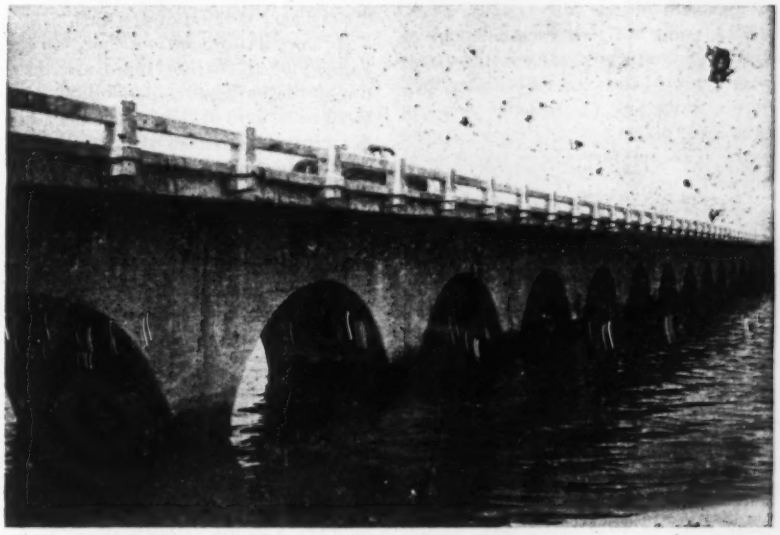
Cast iron pipe, said Mr. Williams, was available in all sizes, the shipments depending largely on the availability of transportation facilities. The latter are so heavily taxed that in some cases WPB may request the use of substitute materials that can be obtained locally rather than permit the delivery of items that will require long railroad hauls.

An editor looks ahead

Exploring future developments, L. H. Enslow, editor of *Water Works and Sewerage*, pointed out that plant operators should be prepared for stiff competition in their jobs because returning war veterans will have acquired new skills and, in addition, will enjoy civil service prerogatives. Regarding the latter, Mr. Enslow raised a question concerning the position of key utility operating men who were persuaded to remain at their jobs instead of entering the armed services. He asked, "Should not these men be given recognition along with veterans so far as civil service ratings are concerned?"

Among anticipated technical developments Mr. Enslow predicted wider use of cement-lined cast iron pipe, as well as asbestos-cement types, more attention to the practice of pre-treating water prior to filtration, and the application of techniques to "burn out" organic matter in treated water, using breakpoint chlorination, chlorite (a compound that releases nascent oxy-

(*Continued on next page*)



Improved Overseas Highway opened for full length

Reconstruction of the Overseas Highway to Key West, Fla., which started in 1937 with construction of 32 miles of toll road along the right-of-way of the abandoned Florida East Coast Ry., was completed on May 16, when 91 additional miles of road built on the old railroad location was placed in service. The work just completed, which shortens the route to Key West by 17 miles, required modification of 19 plain-concrete arch railroad bridges for highway use. This was accomplished by construction of concrete decks overhanging a few feet at each side, as illustrated above.

The project was carried out by the Florida State Road Commission with financial help from the Public Roads Administration. General contractors included Cleary Bros. Construction Co. and Groves, Lundin & Cox.

A detailed description of the work just completed will appear in an early issue of Engineering News-Record.

gen) and possibly ozone; the latter, he said, was still too expensive for general application.

New officers

J. W. Alden, county engineer of Newcastle County, Delaware, was elected to the presidency of the association for the coming year. Clarke Gardner, city engineer of Salisbury, Md., became first vice president, and J. W. Engle, Office of the Chief of Engineers, War Department, continues in his post as second vice president. Miss E. V. Gipe, of the Maryland State Health Department, was re-elected to serve as secretary-treasurer.

• • •

Congress urged to raise Sanitary Corps standing

A bill has been introduced in Congress which would authorize the appointment of an officer of the Sanitary Corps as assistant to the Surgeon General of the Army, with the rank of brigadier general. At the present time the highest ranking officer in the Sanitary Corps, which is a division of the Preventive Medicine section of the Medical Corps, is Col. W. A. Hardenbergh.

Sponsors of the bill (known as S. 1901) point out that establishment of the brigadier-general rank in the Corps would provide proper recognition to a large group of professional workers who are playing a vital role in the war. The Sanitary Corps has a complement of officers, most of whom are engineers, totaling about 2,700. Other specialist groups in the Medical Corps, such as the veterinarians, already have brigadier-general status.

As far back as last October resolutions were passed by at least three organizations—the American Society of Civil Engineers, the American Public Health Association and the National Society of Professional Engineers—urging that the Sanitary Corps be afforded greater recognition in the Army table of organization. It is expected that other groups will take similar action now that Senator G. L. Radcliffe of Maryland has introduced S. 1901, which has been referred to the Senate Military Affairs Committee.

Iowa State Board of Engineering Examiners will hold its next examination for professional engineers on June 6 and 7 and land surveying on June 8, at the board's office in the State House, Des Moines.

Faulty timber found in collapsed water towers

Reports have just come to hand suggesting that faulty timber was at least one of the causes of the collapse of two elevated timber water tank towers at housing projects of the East Baton Rouge, La., Housing Authority, March 3 and April 22. Both towers were 60 ft. high and of pine timber. The first to collapse, at the Monte Sano housing project, supported a 50,000-gal. redwood tank. The tank at the second project, known as Clarksdale, was of 25,000-gal. capacity.

There was no wind at the time of either failure.

After the Monte Sano tank collapsed the load in the Clarksdale tank was reduced to 50 percent of maximum as a precautionary measure, but the failure of its tower ensued notwithstanding.

In a report following an investigation of the Monte Sano collapse, John F. Truxilla, fire and safety engineer for the National Public Housing Authority, Ft. Worth, Tex., stated, "It is quite apparent that these timbers were not sound, dense stock at the original time of construction. This statement is predicated upon the fact that one could take his hand and reach into the center timber and crush out portions with practically no effort and was indicative of the serious condition of dry rot."

He goes on to point out that, "In the opinion of the writer there are three things that present a possibility as to the direct cause of this occurrence: (1) the apparent presence of faulty timbers in the tower construction; (2) the engineering detail of plate construction with drill holes approximately 3½ in. from the butt end of each timber: and (3) the lack of steel in the concrete footings and the possibility of the failure of bond between the two concrete pours." Item 2 relates to the splicing detail for the tower leg sections consisting of 12-in. square plates fastened with four bolts.

Supporting the assumption of faulty timber is a report by C. F. Frazier of the Southern Pine Inspection Bureau, New Orleans, who found the 12x12-in. by 14-ft. long tower leg sections of the Monte Sano tank to be of various grades, and rated two of them as "rejects." One of these he pointed out "contains extensive decay, approximately 3 in. deep, full length and width of piece".

The elevated tanks for both projects were designed by the W. E. Caldwell Co., Louisville, Ky., which also erected the Clarksdale tank. The Monte Sano tank was erected by the general contractor for the whole project, J. F. Meeks Lumber Co., Inc., Baton Rouge.

Huge power, irrigation plan for Palestine

Announcement was made this w by a privately-financed group, know the Commission on Palestine Surv of a bold scheme involving the expe ture of $150,000,000 to develop hydro-electric and irrigation possi ties of the Jordan River valley in Pa tine. Contemplating a Jordan R Authority, and embracing plans o inally suggested by Walter C. Low milk assistant chief of the U. S. Conservation Service, the propect cludes reservoirs on the upper Jor to store runoff water for irrigation both sides of the valley and in addi a 95-mile tunnel and canal connec the Jordan Valley with the Medi ranean Sea. The canal would em into the Dead Sea 1,300 ft. below level, thus providing many opport ties for power development. Like power would be generated with Jor water not used for irrigation, wh drops nearly 3,300 ft. between northernmost dam site and the mo at the Dead Sea.

It is said that the Commission Palestine Surveys, which has offices 521 Fifth Ave., New York City, organized in March, 1943, at the quest of Chaim Weizmann, pr dent of the Jewish Agency for Palest

The power plants would have an stalled capacity of 250,000 kw., they, in conjunction with irrigation is said, would make it possible Palestine to support two or three ti its present population of 1,500,0 which depends on dry farming. irrigation canals on the east side the Jordan River are in the Arab te tory of Trans-Jordan, which is coun upon to secure some measure of supp for the project by Arabs usually ho to Jewish enterprise. In announcing project the commission made the lowing statement:

"The guiding principle is that drop of water should be allowed to to waste, and the plans, therefore, for the building of many dams reservoirs of varying sizes, tentative s for which have been selected, and a work of concrete lined irrigation ca covering the country.

The main feeder canals, exclud laterals, would have an aggre length of 450 miles. Three of the la dams would be from 80 to 300 ft height and from 1,200 ft. to 8,500 in length. The quantity of water ried through the irrigation ca apart from well water, would com about 750,000 acre-ft. a year. The ma impounding reservoirs, natural artificial, would have an aggre capacity of 900,000 acre-ft."

ENGINEERING ABROAD AS SEEN BY ENR EDITORS

t Tarawa, Kwajalein and Eniwetok

By Nathan A. Bowers
Pacific Coast Editor,
Engineering News-Record

This is the fifth, and last, in the series of informal travelogs published in ENR as written by Mr. Bowers while on tour of inspection of Pacific island bases to report on war construction. Earlier reports appeared in our issues of Feb. 17, p. 221, Mar. 2, p. 301, Mar. 30, p. 439 and April 6, p. 453.

FRANCISCO, CALIF.—A typhoon h of Funa Futi changed our plans he return from New Guinea. We expected to go to Tarawa but at Futi, the transfer point, plane s of impatient passengers were forced to wait. However, Lieut. dr. J. J. Delaney (Boston, Mass.), whom I traveled and who is a er of the art of securing trans- ation, found a way despite the to get us through to Pearl *im- iately*. This was welcome news! I 't realized what a yen for civili- n can be developed by a few s in the jungle.

his gave us a much needed breath- spell at Pearl and a chance to get mell of the jungle out of our hair rally and metaphorically). Then a piece of good luck—an invita- to go to the Gilberts and Mar- s with two admirals by special , a four-motored Navy bomber.

Intercepted by fighter planes

n this trip we made some of our st hops far from even a coral . At one point where we were 500 miles from the nearest land, plane's alarm siren sounded, the took battle stations and the 50- ers were swung out. To our sur- three trim fighter planes, speed- ike bullets, circled around to give good looking over. It was a relief e that they were friendly. Our has carriers here. Yes, our s are capable, alert and eager.

ohnston Island a bird paradise

route we stayed over night at ston Island which shall always in in my memory in pleasant con- with certain others. At Johnston the coral beaches are white and their cleanliness matches the clarity of the water. The air is refreshingly cool and there is a neat little hotel, the "Rockabide," where no doors are ever locked, guests rarely see an attendant in the lobby or elsewhere and there is no bill to pay when one leaves.

Johnston must be a sort of bird haven. There were great numbers and several varieties taking an evening flight in high circles as I walked out after supper to see the sun go down. I stayed out to watch a full moon take over the night lighting job, making the coral beach seem even whiter than by day. I had read about moaning birds but I didn't know they lived at Johnston until I walked back to the Rockabide and was chatting with our capable pilot, Lieut. F. L. DeLorenzo, USNR. When the moaning started we both laughed and voted it an excellent lullaby.

Islands (or more properly atolls) of the Marshall and Gilbert groups are very different from those we had visited farther south. Here the origin is coral. Rarely does the highest point on an island exceed a few feet; many rise only 6 or 8 ft. above high tide.

Massive concrete on Kwajalein

The first of the Marshall Islands that we saw was Kwajalein, once well wooded and attractive with graceful palms around a wide lagoon. Now the trees are gone, destroyed by shell fire and bombs. The same holds for the Japs who had these islands under mandate since World War I. And the Nips intended to keep them! Their massive concrete construction proves that. One two-story concrete building had an inlaid hardwood floor, terazzo stairs and a peculiar highly polished finish on massive concrete columns.

At Engebi we asked the island commander how much of a Nip force had been encountered there. "We took twenty-six prisoners," he said, "and buried 947 dead Japs; I think we got 'em all." On Kwajalein some 4,200 Jap dead are buried in an area marked off by coconut logs.

In the headquarters camp at Eniwetok we noted a sign in front of one of the headquarters huts bearing the inscription, "Report dead Japs here," and we realized we were close to the battle front. The Seabee officer in command on this island showed us with pride what his battalion had done in only 44 days since the first landing of combat troops. Despite the fact that these energetic workers were putting in 12 hr. per day (two shifts) 7 days per week, they showed no signs of staleness. In the Quonset hut, where engineers planned their work, men who had already put in their full day were spending the late evening hours on problems yet to be solved. So well had the work been going that the battalion commander confided in us he was about to "let the boys take a half day off every second Sunday." I surely wish some of the leaders in labor union affairs at home could catch the spirit of these Seabees at Eniwetok who, after an 84-hr. week, are glad to *give* overtime!

In two hangars on the airfield at Roi Island the Nips used a design in steel something like our Lamella type construction. Arch ribs were run diagonally both ways for greater strength. The steel is shipped partly assembled, that is, sections of one-man size are shop riveted; field joints are bolted. Sketches of details and photographs promptly went into the report.

The Japs built well on Tarawa

The most interesting concrete structures were at Tarawa where our Marines had such a fight last November. Here again the Nips intended to stay. Their two-story headquarters building has outer walls a meter thick and another inner wall back of a cellular space. Buildings for storing explosives had columns a meter square and the heavy steel doors were doubled (inner and outer pairs). All this concrete was mixed with sea water, using relatively soft coral for aggregate. On

(*Continued on next page*)

some curious features we had a debate about the Nip philosophy—but that is another story.

On the day scheduled for our departure from Tarawa our party went early to a small island nearby. Delays made it apparent that the proposed return to Tarawa by boat would bring us in only in time to take off before dark on the return to Pearl. This meant no more time for me to prowl through concrete ruins and make pictures. That just wouldn't do, so I got permission to leave the admiral's party and was fortunate enough to get a dive bomber pilot to fly me back in a hurry. This extra time on Tarawa, spent in travel by jeep from one concrete building to another, produced some excellent close-up pictures of Jap concrete. The slanting rays of late afternoon sun brought out exterior details, and flash bulbs served the indoor shots. When the boat party arrived and we hurried aboard the plane to use the last of the daylight in our takeoff, I was indeed grateful for those extra hours on Tarawa.

The takeoff was a prolonged and rather anxious time for the ship grossed some 70,000 lb. Every gasoline tank had been filled to the overflow. We were to fly through the night hoping to hit, at daylight, that speck on the map marked Johnston Island.

The essence of democracy

It was a relief to leave worries like that to such a competent pilot as DeLo. I turned in complacently in the Admiral's bunk and had a wonderful sleep after he insisted on taking the "upper" to favor his guest. Gold braid doesn't prevent a man from being a "regular guy."

It was just as well that we slept peacefully. DeLo brought us out of the morning mists to hit Johnston right on the nose, and while he refueled the plane we had a shave and a breakfast to be long remembered. I vote for Johnston Island!

Despite its military importance, to me Pearl Harbor had now become only a stepping stone. After three months in the South Seas and on the verge of leaving for home, all ports looked alike. I was sorry to have to say good bye in a hospital to Lieut. Comdr. Delaney, my good friend and traveling companion, who was fighting an infection contracted in the tropics. In wishing him luck I could only think it might very well have been myself instead of this more seasoned traveler who had picked up the germ.

In contrast to the snail's pace of the steamer that brought me to Pearl I was fortunate enough to get transportation back to San Francisco in a Navy bomber. That was good. I had no patience now for surface craft. I insist that it was patriotic interest and not the temperature of 2 deg. below Centigrade zero that got me up early enough to crawl out into the bombardier's compartment and watch from that vantage point for the first appearance of the California coast. Through the plexiglass nose the first land I made out was Mt. Tamalpais which brought back happy memories. Then came the lower hills and the white line that marks the breakers. We crossed the shoreline at Half Moon Bay and just beyond swept inland over the pass where the Skyline Boulevard reaches the ridge—spots I know well. Then we made a long, graceful glide to a smooth landing on the bay at Alameda and the trip was over. The most interesting, most informative and most strenuous trip I have had in 34 years on *Engineering News-Record* staff.

63 days, 46 ports and 29 bases

I realize that I have been extremely fortunate to have had this experience. This was impressed upon me the more when I added up mileages in my log and found them to total 28,213 miles. Had we traveled a great circle route, that distance would have taken us around the world and back to the starting point with some thousands of miles to spare. But it wasn't the travel so much as the starts and stops that made the trip what it was. Reference again to the log showed that, deducting time spent at Pearl, we were actually on tour 63 days in which we made 46 ports of call and stayed overnight or longer for careful inspection of 29 bases.

We were on the firing line facing the Nips and looking over into their territory on three fronts, Bougainville, New Guinea and the Marshalls. When final records of this war are compiled I believe that the dangers to our forces, just as in our brief visits to the fronts, will be found to have been not so much from bullets as from bugs. The score is probably 20 or 25 to 1 in favor of the bugs. I was just plain lucky in this respect. In other respects, however, the impressi and the changed viewpoint are s that I shall never be quite the sa again.

The happy landing from this f flight of the trip was in nowise j routine completion of another h This trip from Pearl to San Franci was a Californian's return to homeland and that is an event!

• • •

Vice Admiral Waesche heads Society of A.M.E

Vice Admiral Randolph Waes commandant of the United States C Guard, was installed as president of the Society of American Military Engineers, at its annual meeting in Washington, May 8. He succeeded Frederick H. Fowler, chief consulting civil engineer in the office of the Chief of Engineers, U. S. A Col. J. Franklin Bell, executive se tary, reported that the society has 907 members in 70 different posts.

The "Toulmin Medal" for the paper published during the past yea *The Military Engineer*, organ of the ciety, was awarded to Maj. Gen. Ju L. Schley, director of the Transpo tion Division, Office of Co-ordinator Inter-American Affairs, and form chief of engineers, United States Ar His paper was entitled "Policy of P paredness."

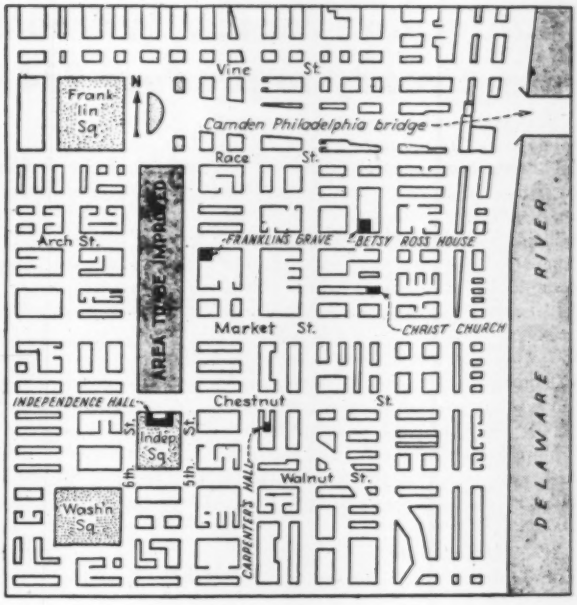
Colonel Edwin C. Kelton, on duty head of the Pacific Engineering D sion, Corps of Engineers, was given Gold Medal Award in absentia for most conspicuous and meritorious s ice to the society for the year."

It was announced that the follow vice presidents had been elected: B Gen. W. H. Rose, Washington, D. special assistant to the Assistant C of Engineers; and Col. Robert Is Randolph, Chicago, Ill., assistant e in the Chicago ordnance district.

• • •

No. Carolina contracto to cut pulpwood

The V. P. Loftis Co. of Charl N. C., engineers and contractors, helping the war effort by offering services of its entire staff and enter into negotiations with the North C lina Pulp Co. at Plymouth, Va., cutting pulpwood, now listed as of the foremost critical materials.



Architectural rendering of proposed parkway plaza, looking toward Independence Square. Map shows area to be improved.

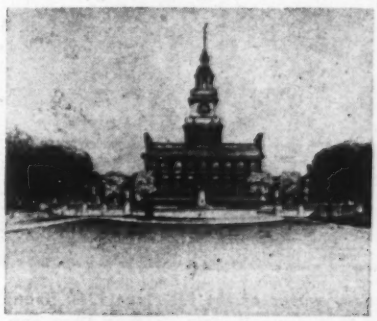
Philadelphia planning to restore historic area

Plans are being formed at Philadelphia to restore as a postwar project the "Old Philadelphia" area. The most important structures in this group are the buildings on Independence Square, fronting on Chestnut St. between 5th and 6th streets. In the center is Independence Hall, which was built in 1735 as the state house. Here the Declaration of Independence was signed, and the building now houses the famous Liberty Bell. To the east is the Old City Hall, where the Supreme Court met in 1791; back of it is the American Philosophical Society building erected in 1787, and to the west Old Congress Hall, which was completed in 1797 and used when Philadelphia was the national capital. Other notable buildings in the vicinity include the Hall of the Carpenters Company, erected in 1770 and the original home of the Carpenters Guild, where the Continental Congress first met; the old Custom House, erected in 1824, to house the second bank of the United States, and the Old Franklin Institute, erected in 1826. Not far away are the Betsy Ross House, where the first flag of the United States was made; Christ Church, built in 1727; Gloria Dei or Old Swedes Church; the Pennsylvania Hospital—immortalized by Longfellow in "Evangeline," and the oldest bank building in America.

The plan for improvement of the district provides for a park fronting on Independence Hall and extending northward from Chestnut St. between 5th and 6th St. to Race St. to connect with the Philadelphia Plaza of the Philadelphia-Camden Bridge. The proposed work also includes widening 5th and 6th streets to boulevard width and the construction of a park, a playground, and parking facilities for automobiles and buses.

Plans also call for rehabilitation of other nearby areas as a residential district, as it is not believed that industry and commerce can be persuaded to move back into the vicinity of Independence Square. Time has also taken its toll near Washington Square, where the surrounding area is still largely residential. Considerable work is planned in this region.

Business developments along the Delaware River front also have changed, many commercial houses having moved to other locations. The river is esthetically unattractive, but the city now contemplates the construction of sewage treatment works that would relieve the stream of the heavy pollution burden it carries.



Proposed plaza at Independence Hall.

Historic buildings of the district that have been demolished include: The Executive Mansion, occupied by Presidents Washington and Adams, and the house in which Jefferson wrote the Declaration of Independence. Future developments might include restoration of these buildings in the manner so successful at Williamsburg, Va.

The program is being sponsored by the Independence Hall Association, a non-profit organization of Philadelphia citizens created for the purpose. As a result of its activities the group of buildings has been designated as a national historic site by Congress, and an agreement has been reached between the city and the United States whereby the title to the property would remain in control of Philadelphia. The National Park Service will aid with the project.

The suggestion has been made that the peace treaty at the end of the present war be signed in Independence Hall. Not only is the building well known to Americans, but to other nations as well. For example, Czechoslovakia signed its Declaration of Independence in the building July 4, 1918.

California's largest hydroelectric plant ready to produce 214,477 hp.

The new 214,477-hp. Pit 5 plant of the Pacific Gas & Electric Co. on the Pit River in northern California was completed and dedicated on April 29.

There were difficult engineering problems on this $25,000,000 project: For example, the driving of a 5.33-mi., 19-ft. dia. concrete-lined tunnel (inner dimension) through recurring stretches of "swelling ground" that snapped 16-in. square timbers placed almost side by side as roof and wall supports. (EN-R, Oct. 21, 1943, p. 604).

Tunnel superintendent was Harry F. Scott, who already had many difficult underground construction jobs to his credit.

Site of the huge power development, largest hydroelectric plant in California, is on the Big Bend of Pit river, 57 mi. from Redding. At this point the stream makes a wide turn, the distance around the winding bend being about 10 mi. The distance across the base of the arc is about 6 mi. It was across the base of the loop that the tunnel was constructed in order that the waters of the river could be delivered to the powerhouse turbine under a static head of 630 ft., the difference in elevation between the point of diversion and the powerhouse tailrace.

At the point of diversion a 350-ft.-wide dam, topped by a gate-operating structure, spans the river. Four 90-ton steel gates control the flow of water into the tunnel intake at a maximum rate of 3300 ft. per second.

The penstocks shown in the background carry water of the Pit river 1380 linear ft. down the mountainside to the turbines that drive the plant's four huge generators, each one of which produces 40,000 kw. of electricity.

Construction of the project w started July 5, 1941. Earth and rock e cavated during the construction peri totalled 1,630,000 cu. yds. Of th amount 600,000 cu. yd. were taken o during work on the tunnel.

With the completion of the proje electric energy for Pacific coast w industries, business and rural use w boosted 214,477-hp., the new pow plant's rated capacity.

• • •

Fontana Dam concrete on rapid schedule

The TVA has announced that th 2,000,000th cu.yd. of concrete w placed May 8 in the Fontana Dam i western North Carolina and that som 800,000 yards more are needed to com plete the dam. The second millio cubic yards has been placed since Oc 1, 1943, as construction speeded ahe under wartime schedules. A total 211,000 cu.yd. were placed in Apri and the schedule for May calls fo 240,000 yd.

Fred Schlemmer, is project manage G. E. Murphey is construction superi tendent, and Oren Reed is constructio engineer. A force of 2,600 constructio workers is engaged on the project.

• • •

Huge industrial center proposed for N. Y. City

The proposed building of a great pos war industrial structure for New Yor City—a $10,000,000 project to cove four square blocks on the lower we side of Manhattan, was announced Ma 10 by the Tishman Realty & Constru tion Co. Inc., which bought the si from the New York Central railroa

Involved in the transaction is the ol St. John's Park Terminal comprising plot of about 180,000 sq.ft. with a fron age of 440 feet on Varick and Hudso Streets and 405 feet on Beach an Laight Streets. Construction of th building, to contain approximatel 2,500,000 sq.ft. of rentable area, wi be undertaken as soon as the war i over, it is said.

Plans are being prepared for a 1 story building to offer tenants the larges individual floor space layouts availabl in the metropolitan area—close to 180 000 square feet of unobstructed are with a stretch of more than 400 ft. i any direction, especially designed fo assembly-line production. Many ne features of construction and design wi be incorporated in the proposed struc ture in anticipation of post-war advance in manufacturing, warehousing and dis tribution facilities.

News of the engineering schools

Blake R. Van Leer, dean of the hool of Engineering at North Caro- a State College,

w on leave to ervise the train- of engineering ficer candidates the Army, has en named pres- ent of the orgia School of chnology, At- nta, effective ly 1, to succeed arion L. Brittain, named president eritus.

Col. Van Leer received his engineer- degrees at Purdue University and University of California. He served an engineer for the Southern Pacific R. until the first World War, which entered as a first lieutenant. He s overseas 13 months, was awarded e Croix de Guerre, and at the end the war was a captain of the 316th gineers 91st Division. After the war returned to the railroad, and later rved four years as assistant secretary the American Engineering Council. 1932 he became dean of engineer- g at the University of Florida, and as made engineering dean at North arolina State College in 1937. He was ain called to active duty in 1942, d was promoted to colonel Oct. 16, 43.

At present Col. Van Leer is chief, perations Branch, Army Specialized raining Division, Army Service Forces Washington, D. C., and has general pervision of operations of all Army pecialized Training Program units in 0 colleges.

The Georgia School of Technology robably will build either a new class- om building or a new library in the mediate post-war period using $150,- 0 from its Hinman Fund. It is said at a larger fund is in hand for still nother building, and there are tenta- ve plans for an auditorium and a rmitory, as the institution expends.

Foreseeing "the beginning of the end the war emergency in education," arvey N. Davis, President of Stevens stitute of Technology, says that "the me has come not only to plan for but tually to begin our reconversion job putting education back on a peace- me basis," and he adds:

"On the basis of the present outlook, man not over 17 years old when he nters Stevens a couple of months from ow can expect to stay for at least three rms of normal educational training before being drafted. We believe it is not impossible that such a boy can by that time hope to complete his engineering education in the normal way. If not, we hope that further training as an engineering specialist under the Navy V-12 program will still be open to him as he approaches 18.

"Even if the war should last three or four years longer, we believe this is the wisest thing for a young man to do if he can foresee even one semester of normal training before being drafted. He will have a head start toward an engineering education on the peacetime pattern. Even if the current insistent military demand for young men of college age continues longer than we expect, such a man will enter a war training program far better prepared for whatever may lie ahead. No institution can prophecy what will happen in the future, but we have decided that the best way to get back to a peacetime footing is to make a start in that direction now."

The college of engineering at New York University will continue its accelerated program, starting new terms every twelfth week to accommodate discharged veterans and other students who wish to begin, continue or complete their studies, Dean Thorndike Saville has announced.

"High school graduates who meet admission requirements and returning veterans can register for the new term and, by attending ten 12-week terms consecutively, complete courses for a degree in two and one-half years," Dr. Saville said. "Discharged veterans who have studied engineering, either before they went into service or in the Army Specialized Training Program, can receive credit for the completed work and register with advanced standing.

"The 12-week term corresponds closely to the ASTP training period. Students under 18 can complete a course comparable to the basic ASTP in 36 weeks. Students who have engineering training already may go into advanced work, and for the veteran, the program will permit great flexibility, enabling him to pick up readily where he left off, especially if he has had ASTP or accelerated civilian college training."

Edmond A. Hughes, Coral Gables, Fla., retired utilities and mining operator, has announced that he is giving the University of Miami $500,000 for the construction of a new school of engineering in the postwar period. He also said that he would later donate another $500,000 with which to equip the building. A committee of Miami citizens has organized a campaign to obtain a fund of $1,000,000 for the university.

Thomas R. Camp has announced his resignation from the faculty of the Massachusetts Institute of Technology to open offices for full-time practice as a consulting engineer. Mr. Camp will have offices in the Statler Building, Boston, and will specialize in waterworks, municipal and industrial waste disposal, stream sanitation and flood control.

The board of trustees of Purdue University has voted to merge the departments of applied mechanics and civil engineering, effective July 1. Prof. Ralph B. Wiley, who has been head of the school of civil engineering becomes head of the school of civil engineering and engineering mechanics.

For the first time in the history of Denver University a coed was elected president of engineering students. She is Miss Dorothea Barcus. In high school she took a particular interest in engineering and won a scholarship giving her a year at the university.

Two low-temperature rooms for testing building construction have been built at State College, Pa. Each room is called a "weatherometer" and is 17 ft. high. Refrigerated space in each room is 25 x 30 ft. Temperature is produced by compound compression and ranges from −60 deg. F. to +130 deg. F.

Prof. Franklin Thomas of the civil and mechanical engineering department of California Institute of Technology, has been appointed dean of upper classmen, succeeding the late Frederic W. Hinrichs, Jr.

A curriculum in aeronautical engineering has been established at the Pennsylvania State College with David J. Peery as head.

Dean Harry P. Hammond, of the School of Engineering, believes that the new curriculum will fill an educational need and provide a service in aerodynamics, aircraft structure, and aircraft materials.

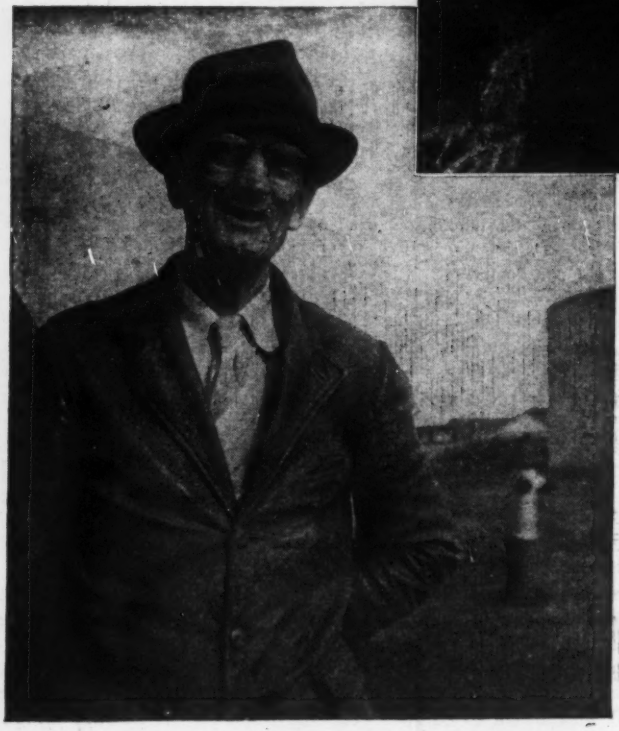
Professor Peery formerly taught at the Missouri School of Mines, Carnegie Institute of Technology, and Washington University in St. Louis. In addition, he has worked with the Missouri State Highway Department in bridge design.

MEN AT WORK

In Texas

CAPT. BEVERLY SPILLMAN, JR., post engineer, and FRED BOCK, plant operator at the Blackland Army Flying School, Waco, take pride in exhibiting the cup that was awarded to them by the Texas State Health Department for superiority in sewage plant operation.

LUIS PACHON, (above) sanitary engineer of the Colombi federal government, who has just completed a year graduate study at the University of Texas, with L. B. GI FITH, vice president and chief engineer of the Hays Proc Co.



S. L. ALLISON, (at left) superintendent of sewers, Cor Christi, Tex., who was one of that hardy band of engine engaged on the construction of the ill-fated Maderia-Mam Railway in Brazil, nearly half a century ago.

RENCE W. KLASSEN, on military leave his post as chief engineer of the Illinois Board of Health, is now serving as a tain in the Sanitary Corps assigned to the Service Command in Dallas, Tex.

JAMES NAISMITH and C. S. REAGAN, engineers with Myers and Noyes, consultants, who are engaged on a waterworks and sewerage improvement program for Corpus Christi, Tex.

EHLERS, state sanitary engineer, who ally unfolded a postwar plan to benefit water and sewage works operators ugh the establishment of a "Sanitary ndation". Among other things, the Foun- on would maintain a roster of job op- tunities.

W. T. BROOKS, sanitary engineer associated with the Repairs and Utilities Section of the 8th Service Command in Dallas, is making a special study of sewage plant operating problems in the Lone Star state.

Army-Navy "E" awarded to American Bridge Co.

In awarding the joint Army-Navy "E" recently to the American Bridge Co., subsidiary of the U. S. Steel Corp. at Gary, Ind., top ranking officials of the armed services paid high tribute to the company's exceptional performance on the production front. The entire day and night shift assembled in one end of the huge steel-fabricating plant to hear Rear Admiral Arthur S. Carpender, commandant of the Ninth Naval District, present the award to the company's president, L. A. Paddock. The Army was represented at the ceremonies by Col. Henry E. Tisdale, commanding officer, Fort Benjamin Harrison.

In reviewing the important role played by the American Bridge Co. in this nation's war program, Admiral Carpender, pointed out that many important army and navy installations had been fabricated at Gary prior to Pearl Harbor. These products went into the defenses of the Panama Canal, Alaska, Hawaii, Guam, Wake Island and the Philippines.

He also pointed out that the Gary plant had, during 1941–42, contributed much to the building of large war plants including giant hangars for the Navy, aircraft factories, steel mills at Provo, Utah, and many large industrial buildings in the Chicago Calumet area.

When this phase of its program was completed, late in 1942, said Admiral Carpender, the plant's fabricating facilities were converted to supplying subassemblies for fighting ships. This work help demostrate that the prefabrication of ships can be performed satisfactorily at inland yards.

In recent months the plant has contributed much to the building of dozens of escort-type airplane carriers. At present, its assembly lines are turning out large sub-assemblies for plane carriers of the Essex-type. Many cargo craft also being frabricated for the Maritime Commission.

Of special interest to the construction field are the Woodbridge, boiling-bowl type, all-welded scrapers now being produced for overseas duty. The first scraper was completed April 15, under an initial contract for 75 units of 14 cu.yd. capacity. A second contract calls for 155 scrapers of the same size and 145 units of 10 cu.yd. capacity. The production of scrapers might be projected into the postwar era should the demand for such machinery exist in the general field of public work construction.

Another program just started, is the fabrication of 80 bulldozers designed to be tractor-drawn by standard power units manufactured by the Allis-Chalmers Co., International Harvester Co. and the Caterpillar Tractor Co.

In accepting the Army-Navy "E" Award, president Paddock pointed out two vital factors that have contributed much to the company's production record. One, is the fact that no lost time has occurred since Pearl Harbor due to misunderstandings between labor and management. The other, the outstanding success in the employment and training of women war workers.

Considerable credit for the wartime production records set by the Gary plant of the American Bridge Co. also is due Austin J. Paddock, resident plant manager. A graduate of the University of Michigan in 1929, Mr. Paddock spent several years in the erection department at the company's plants in Ambridge, Pa., and Elmira, N. Y. He was promoted to his present position in July, 1941.

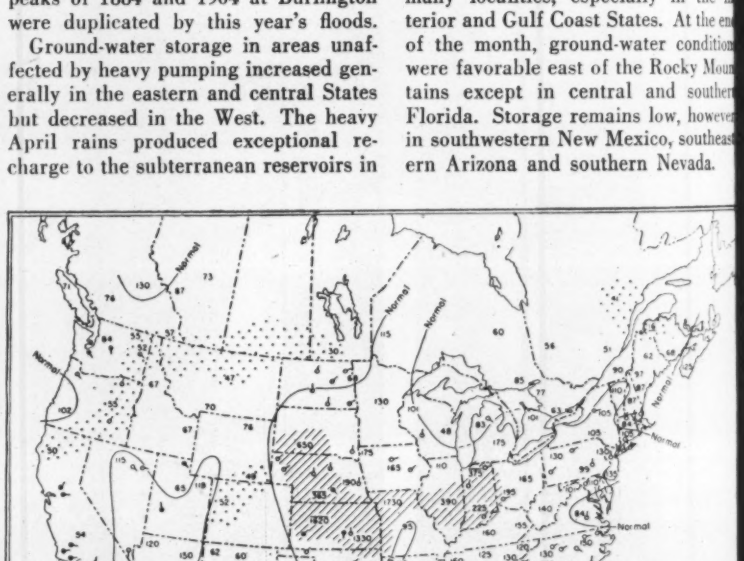
Clarence J. Kennedy is chief engineer at the Gary plant and Frank J. Cavanaugh is plant superintendent.

Abnormal precipitation brought many floods in April

Country-wide abnormalities in precipitation and temperature during April resulted in greatly contrasting stream flow. Throughout Canada, New England, and the West, the weather was cold, retarding snow-melt, and stream flow was far below normal except in parts of central and southern intermountain region where current and prospective flows are generally favorable. For the 11 Western States the Weather Bureau reports above-normal April precipitation except in Montana (80 percent of normal). In the higher mountain areas this above-normal precipitation fell as snow, the runoff of which was delayed by low temperature so that the water outlook as a whole is generally more favorable than was indicated on April 1 or by the stream flow during April except for northern and western Montana and possibly southeastern Arizona.

In contrast, excessive runoff followed excessive precipitation in the central West, lower Ohio Valley, and in the Southeastern States. In Kansas and Missouri, flood stages approached and on the Mississippi River at St. Louis, Mo., exceeded those of May 1943. In the upper Neosho River Basin in Kansas previous maximum of record (May 1943) was exceeded at Parsons and peaks of 1884 and 1904 at Burlington were duplicated by this year's floods.

Ground-water storage in areas unaffected by heavy pumping increased generally in the eastern and central States but decreased in the West. The heavy April rains produced exceptional recharge to the subterranean reservoirs in many localities, especially in the interior and Gulf Coast States. At the end of the month, ground-water conditions were favorable east of the Rocky Mountains except in central and southern Florida. Storage remains low, however, in southwestern New Mexico, southeastern Arizona and southern Nevada.


Normal
EXPLANATION
Deficient stream flow
Excessive stream flow
Greater than any percentage previously recorded during April
Less than any percentage previously recorded during April
Month-end ground-water level in observation well.
High
Normal
Low
Wells in formations heavily pumped shown by solid circles.
All numbers are percent of normal (median or mid-value) stream flow for month of April
UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY IN COLLABORATION WITH CANADA DEPARTMENT OF MINES AND RESOURCES DOMINION WATER AND POWER BUREAU
APRIL 1944

Stewart organization's 100th anniversary

The James Stewart organization, one the oldest and largest engineering nd construction groups in the country, celebrating its 100th anniversary this ear and is moving its national headquarters from the Fisher Building in Chicago, where it has been for the past 0 years, to the Continental Illinois National Bank Building. Harry D. Watts president, and M. E. Crosby and Andrew Fischer, Jr., vice presidents. The rganization, which consists of the ames Stewart Corporation and James tewart & Co., Inc., was founded by ames Stewart in 1844.

The work done by Stewart reaches most parts of the globe, and includes e Trinidad Naval Air Station and perating Base, Sangamon Ordnance lant, Illiopolis, Ill., the Republic Steel ant at South Chicago; the Savoy otel, London; the Chateau Frontenac, uebec; the greater portion of the New ork State barge canal; the west side evated highway, New York City; the nion Terminal at Cincinnati; and any other structures.

• • •

Chicago sanitary plant gets WPB approval

The smaller of two projects proposed the Chicago sanitary district to move 500 tons of solids a day from e Des Plaines River, the Calumet-Sag hannel and the Illinois River, all of hich carry drainage from the district, s been approved and given priority ing by the War Production Board. It estimated the solids will provide 750 tons of fertilizer a year. W. H. inkhaus, chief engineer and general nager of the Chicago Sanitary Dis-ct, has also applied for priority istance for the second project, and s application is pending before WPB. Priorities for the approved job cover 9,432 of equipment for extension of tilizer production facilities at the thwest sewage treatment plant. l will permit production, officials ounced, of 19,000 tons of organic tilizer a year. At an estimated rate $17.50, this would have an annual ue of $332,500.

The second project would cost $5,526-, and would increase the fertilizer duction at the plant by 54,750 tons, a yearly estimated value of 90,000.

rganic fertilizer is now produced the Chicago Southwest sewage tment plant by filtering waste acti-d sludge over vacuum filters, drying ith flash drying equipment.

JOBS OF THE WEEK

CORD PLANT ADDITION, Decatur, Ala.

Goodyear Tire & Rubber Co., Akron, O., awarded a contract for a 280x360-ft. one-story brick building to Rust Engineering Co., Birmingham, Ala. The estimated cost is $1,250,000. Roberts & Co., Atlanta, Ga., are the engineers.

FILL AT AIRPORT, San Francisco, Calif.

U. S. Engineer, San Francisco, received lowest bid for fill at municipal airport (formerly Mills Field) San Mateo Co., from Macco Co., Oakland and Morrison-Knudsen Co., Inc., San Francisco, at $2,013,000.

HOSPITAL, Canadaigua, N. Y.

Veterans Administration, Washington, D. C., awarded a contract to build hospital and utilities, infirmary building 34, to William M. Moore Building Corp., New York, N. Y., at $1,393,000.

EXTENDING RUNWAYS, Edmonton, Alta.

Department of Transport, Ottawa, Ont., awarded a contract to extend runways and ground surfacing at airport to Crown Paving & Construction Co., Ltd., Edmonton, Alta. The estimated cost is $1,500,000.

AIR FACILITIES, Virginia and North Carolina

Grannis, Thompson, Street & Wattinger, Richmond, Va., were the lowest bidders for additional air field facilities at Pungo and Creeds, Va. and Manteo, N. C., when the Bureau of Yards & Docks, opened bids at $1,391,000. Giffels & Vallet, Norfolk, Va. are the engineers.

ADMINISTRATION and PERSONNEL BUILDING, Seal Beach, Calif.

Bureau of Yards & Docks, Navy Department, Washington, D. C., awarded a contract for administration and personnel buildings at Naval Magazine and Net Depot to William P. Neil Co., Los Angeles, Calif., at $1,468,703.

FLYING FIELD, New Orleans, La.

Higgins Aircraft Inc., Higgins, La., awarded a contract to construct proposed flying field including runways, pumphouse, drainage, to D. W Winkleman Co., Syracuse, N. Y. The contractor bid $2,275,000 on basic design.

HOUSING, Panama City, Fla.

City Construction Co., Bridgeport, Conn., was the lowest bidder for constructing a 260-unit housing project when Public Housing Authority, Atlanta, Ga., opened bids. The low offer was $599,000.

STOREHOUSES, San Diego, Calif.

Bureau of Yards & Docks, Navy Department, Washington, D. C., received the lowest bid for constructing multi-story storehouses, Navy Supply Depot, from Ford J. Twaits Co., Los Angeles, at $1,451,175.

Note—Additional bidding and contract news on many projects large and small appear in the Construction News section beginning on page 15.

Harrisburg consultants change their firm name

The engineering and construction company of Gannett, Eastman & Fleming, Inc., Harrisburg, Pa., has changed its name to Gannett, Fleming, Corddry and Carpenter, Inc., on account of the recent death of Frank H. Eastman. Farley Gannett and Samuel W. Fleming, Jr., the original partners, continue as president and vice-president as they have been for 30 years since the business was established. W. H. Corddry, with the company for 28 years, continues as vice-president in charge of engineering. J. D. Carpenter, with the company for 25 years, continues as vice-president in charge of appraisals.

New coagulation basin for Louisville, Ky.

The municipally owned Louisville, Ky., Water Co. is planning a $700,000 coagulation basin, and expects to be ready for contract advertising within a month, according to a statement issued by the company and Mayor Wilson W. Wyatt. The latter says that information from Washington indicates that such critical materials as are needed might be made available, in which case work might start next fall.

The city of Louisville is collecting a million dollars or more annually from the water company, used to pay off bonded indebtedness of the city, and the water company has a surplus.

OBITUARY

James W. Beardsley, 83, died at Auburn, N. Y., May 15. He received a civil engineering degree from Cornell in 1891, and was assistant engineer with the Sanitary District of Chicago in charge of construction in 1892-98. For the United States Board of Engineers he made surveys of the St. Lawrence River in 1898-1900, and was in charge of harbor work for the United States Corps of Engineers in 1900-02, and was director of public works of the Philippines in 1905-08. In 1908-09 Mr. Beardsley was a consulting engineer on irrigation in Java, India and Egypt. In 1909-10 he was irrigation engineer with J. G. White & Co. In 1910-16 he served the Puerto Rico Irrigation Service as chief engineer.

Jacob Boyd Ross, 54, highway construction engineer, died at Forest City, N. C., May 13. He was a native of Blacksburg, S. C., and moved to Forest City three years ago.

Clarence M. Blair, president of Clarence M. Blair, Inc., consulting engineers, New Haven, Conn., died there on May 21. A native of New Haven and a graduate of Sheffield Scientific School, Yale University, in 1904, Mr. Blair has been engaged in engineering work in Connecticut since 1904, first with Albert B. Hill, then with Blair & Marchant, and since 1938 under his own name. He specialized largely in water-supply work. Mr. Blair was a past president of the Connecticut Society of Civil Engineers and served as a director of the American Society of Civil Engineers from 1940 to 1943.

Fred G. Campbell, 75, formerly chief engineer of the Painesville, Ohio, waterworks system for seven years, died May 2.

Frederick Q. Teichert, 28, died in Sacramento, Calif., May 12. A graduate of the College of Civil Engineering at the University of California, Mr. Teichert was vice president of A. Teichert and Co., Inc., general contractors, and a director of the Northern California Chapter of Associated General Contractors.

W. Frank Ranstma, 59, deputy commissioner of public works and city engineer of Fresno, Calif., died May 12.

D. Neely Hughey, 53, Memphis, Tenn., contractor, died May 10. For the last three years he had done work in Florida, Alabama, North and South Carolina, Georgia and Arkansas. Among his Memphis contracts was the earth work on the local airport in 1935.

Ernest Clark Hall, 57, Oregon contractor and road builder, died May 6 at Portland. He was owner of E. C. Hall & Co., and a director of the Portland unit of the Associated General Contractors.

F. B. James, 71, for many years county engineer of Bruce County, Ont., died in Walkerton, Ont., April 25. Mr. James continued as a consulting engineer after his retirement from his county post.

Thomas Hitchcock Joy, 69, civil engineer, died in Birmingham, Ala., May 14. Under his direction was built "The Iron Man", a huge statue of Vulcan on Red Mountain. The statue, almost as large as the Statue of Liberty, was a project of the Birmingham Kiwanis Club. Visible for miles on every approach to Birmingham, it is symbolic of the iron and steel industry of that district.

Henry Mueller, 67, general contractor of Dubuque, Ia., died recently. He had been in the contracting business for 45 years and headed the firm of Henry Mueller & Son.

Frank O. Hill, 62, a building contractor and member of the executive committees of the Cleveland, Ohio, Building Trades and of the Wood Wire and Metal Lathers Union, died in Rochester, N. Y., May 6.

CONTRACTS AND CAPITAL

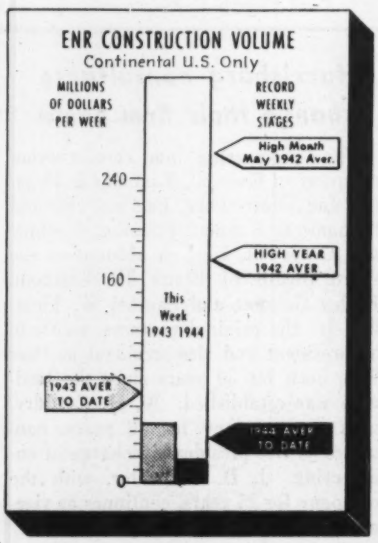
CIVIL ENGINEERING construction volume in continental U. S. totals $27,885,000 for the week. This volume, not including the construction by military engineers abroad, American contracts outside the country, and shipbuilding, is 4 percent higher than a week ago, but 40 percent under the total reported for the corresponding 1943 week, and 20 percent lower than the previous four-week moving average.

Public construction tops a week ago by 28 percent as a result of the 51 percent rise in federal volume, but is 49 percent below a year ago. Private work is 40 percent below last week, but tops last year by 61 percent.

The current week's construction brings 1944 volume to $734,019,000 for the 21 weeks, a decrease of 51 percent from the $1,491,759,000 reported for the period in 1943. Private construction, $168,912,000, is 13 percent above a year ago, but public construction, $565,107,000, is 58 percent lower due to the 61 percent decrease in federal work.

In the classified construction groups, gains over last week are in waterworks, sewerage, industrial and public buildings, and unclassified construction. Gains over the 1943 week are in industrial buildings, earthwork and drainage, and unclassified construction.

New capital for construction purposes for the week totals $10,642,000, and is made up of $10,100,000 in corporate security issues, and $542,000 in state and municipal bond sales. New construction financing for 1944 to date, $426,549,000, is 13 percent below the $492,422,000 reported for the 21-week period last year.



CONTRACTS

Continental U. S. Only
(Thousands of Dollars)

	Week Ending May 27 1943	May 18 1944	May 20 1944
Federal	$36,371	$10,467	$15,70
State & Municipal	6,440	6,716	6,27
Total public	$42,811	$17,183	$22,02
Total private	3,654	9,724	5,86
TOTAL	$46,465	$26,907	$27,88
Cumulative 1944 (21 weeks)			$734,01
Cumulative 1943 (21 weeks)			$1,491,75

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	1943 21 Weeks	Cumulative 1944 21 Weeks
NON-FEDERAL	$92,072	$181,25
Corp. Securities	3,571	82,58
State & Mun.	76,368	44,96
RFC Loans	9,000	53,79
FPHA Loans	3,133	
FEDERAL	$400,350	$245,26
TOTAL CAPITAL	$492,422	$426,54

ENR INDEX NUMBERS

		1913	192
Construction Cost	May '44	298.00	143.2
Building Cost	May '44	234.80	126.8
Volume	Apr. '44	106.	46.